USSR

UDC 678.643.01:53

GOLUBENKOVA, L. I., DEMEKHINA, YE. M., CHIBISOVA, YE. I., SMIRNOVA, L. N., EKSANOVA, N. D., and YUDIN, V. F.

"Binders for Fiberglass-reinforced Plastics Based on Epoxy Resin ETF"

Moscow, Plasticheskiye Massy, No 6, 1970, pp 13-15

Abstract: In order to increase the thermostability of fiberglass-reinforced plastics, work is being done to create binders based on epoxy resins which differ in structure from diane resins, primarily cycloaliphatic and polyfunctional epoxy resins. Polyfunctional resin ETF, which is the product of the interaction of 1,1,3-tri-(hydroxy-phenyl)-propane and epichlorohydrin, has a molecular weight of 540-700 and contains 20-24 percent epoxy groups. Hardening of this resin with amine or acid hardeners makes it possible to obtain specimens possessing higher thermostability than diane epoxy resins. The greatest bending strength is found in specimens hardened with aniline-phenol-formaldehyde resin 211, the greatest compression strength in specimens hardened with maleic anhydride. Aniline-phenol-formaldehyde

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USSR

GOLUBENKOVA, L. I., et al., Plasticheskiye Massy, No 6, 1970, pp 13-15

resin 211 was chosen as the main hardener. The binder representing a composite of resins ETF and 211 has been given the brand designation T-71-S. Since resin ETF softens in the 35-55° C range, it can be used for the "dry" process of fiberglass-reinforced plastics manufacture. The properties of the binder applied to the glass cloth, as well as of the resultant fiberglass-reinforced plastics depend on the character of the solvent used to impregnate the glass filler and the storage conditions for the impregnated cloth.

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USSR UDC 64.385.6

[redacted], TERZHOV, I.I.

"Method Of Measurement And Calculation Of Spectral Densities Of Wave Components Of The Noise Of A Beam In Crossed Fields"

V sb. Vopr. elektron.tekhn. (Problems Of Electronic Technology--Collection Of Works), Issue 2, Saratov, Saratov University, 1971, pp 113-136 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3A11)

Translation: A method is described of measurement for a calculation of the p wave components of the noise of an electron beam (EB). For the calculation it is necessary to measure the noise factor of the amplifier in which the q wave components of the EB interact with the wave of the delay system. The noise factor is only measured during a change of the electrical performance of the electron transformer with a velocity jump of the EB located between the electron gun and the input into the delay system. The elements are obtained of the matrix of the transformer and amplifier for a 4-wave model of a thin EB in crossed fields. 10 ref. R.B.

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USSR

UDC 621.385.652

GOLUBENTSEV, A.E., MINKIN, L.M.

"To The Problem Of The Effect Of The Thermal Noise Of A Delay System On The Minimum Noise Factor Of A TWT"

V sb. Vopr. elektron. tekhn. (Problems Of Electronic Technology--Collection Of Works), Issue 2, Saratov, Saratov University, 1971, pp 150-154 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3A79)

Translation: The effect is theoretically studied of the thermal noise of a delay system (DS) on the minimum noise factor of a traveling-wave tube with an arbitrary law for the temperature distribution of the DS. An expression for the minimum noise factor as a function of the antenna temperature, the function of temperature distribution of the DS, and the Pierce parameters for a TWT are obtained. Graphs are constructed for various functions of the temperature distribution. It is established that for a reduction of the minimum noise factor in superlow noise TWTs it is necessary to cool the input part of the DS. 3 ref.R.M.

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USSR

UDC 621.385.632

GOLUBENTSEV, A.S., MINKIN, L.M.

"Concerning The Effect Of Current Settling In Electron Gun On Minimum Noise Factor Of TWT"

V sb. Vopr. elektron.tekhn. (Problems Of Electronic Technology--Collection Of Works), Issue 2, Saratov, Saratov University, 1971, pp 137-145 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3A80)

Translation: The effect is theoretically investigated of current settling [tokoosedaniye] in an electron gun (EG) on the minimum noise factor of a TWT. The conclusion is made that current settling in an EG, in contrast to current settling in the interaction region, does not constitute a serious threat in the sense of a considerable increase of the noise factor of a TWT. Use of special electrodes leading to current interception in the region of the EG is able to prevent current settling inside the delay system, which leads to a decrease of the noise factor. 7 ref. R.M.

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USSR

UDC 621.385.6

GOLUBENTSEV, A.F.

"Concerning Use Of Special Systems Of Polynomials For Determinaton Of The Gain Of Microwave Devices With Prolonged Interaction"

V sb. Vopr. elektron. tekhn. (Problems Of Electronics Technology--Collection Of Works), No 2, Saratov, Saratov University, 1971, pp 74-82 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A35)

Translation: A method is described for determining the gain of microwave devices, based on the use of special systems of polynomials. The method makes it possible to avoid the solution of characteristic equations and can be used for calculation, not only of traveling-wave tubes, but also for other microwave devices. It is shown that in practice the gain computed by the proposed approximate formulas agrees with the precise value of the gain if the power of the polynomial n = 6. 8 ref. V.M.

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USSR

UDC 621.385.633

GOLUBENTSEV, A.F., MINKIN, L.M.

"Effect Of Current Interception At Input To Delay System On The Noise Factor Of BWT"

V sb. Vopr. elektron.tekhn. (Problems Of Electronics Technology--Collection Of Works), No 2, Saratov, Saratov University, 1971, pp 146-149 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2A158)

Translation: It is known that current subsidence [tokoosedaniye] in the interaction region leads to a significant increase of the minimum noise factor of a traveling-wave tube (TWT). The effect of current interception [tokoperekhvat] on the noise factor of a backward-wave tube (BWT) is analyzed. It is shown that under specific conditions, the minimum noise factor of a BWT is smaller than the noise factor of a TWT. Consequently, during construction of super low noise microwave amplifiers with current subsidence conditions at the input to a delay system it is preferable to use a BWT. V.M.

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ELECTRONICS

Amplifiers

USSR

UDC 621.385.832.032.21.001.5

GOLUBENTSEV, A.F., TERZHOV, I.I.

"Minimum Noise Factor Of Microwave Beam Amplifiers Of M-Type"

Radiotekhnika i elektronika, Vol XVII, No 3, Mar 1972, pp 569-576

Abstract: After a review of works concerned with the development of the theory of noise in M-type microwave beam devices, the paper proceeds, with the use of the theorem of kinetic power (with a low signal) for thin beams in crossed fields, to obtain a general expression for the minimum noise factor of microwave amplifiers of M-type. The effect of distributed losses in the delay system on the noise factor is taken into consideration. 3 fig. 18 ref. Received by editors, 13 July 70.

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USSR

UDC 621.385.632

GOLUBENTSEV, A. F., and POLYAKOV, O. S.

"Study of Noise in Continuous Power TWT"

Elektron. tekhnika. Nauch.-tekh. sb. Elektron. SVCh (Electronics Technology), Scientific-Technical Collection. Microwave Electronics), 1971, Issue 4, pp 117-126 (from RZh-Elektronika i yeye primeneniye, No 8, August 1971, Abstract No 8A185)

Translation: Some problems are considered of the theory of amplitude and phase fluctuations of the output signal of a traveling-wave tube in linear operating conditions. In the frequency tuning range of 0.2--6.5 MHz, a study is conducted of the noise factor and the spectral density of the fluctuations of the amplitude and phase of the output signal, using a model of a TWT. The connection is established between the intensity of fluctuations and the noise factor. The calculations conducted and the experimental results show that the noise of the input signal and the additive high-frequency noise can exert a considerable effect on the observed level of amplitude and phase fluctuations of the output signal. 8 ref. S ummary.

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UDC 621.385.632

USSR

GOLUBENTSEV, A. F., MINKIN, L.M.

"Amplitude And Phase Noise Of A TWT Resulting From Low-Frequency Fluctuations Of Current (Summary Of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 6, pp 110-111 (from RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10A162)

Translation: The paper considers the high-frequency noise of the output voltage in a TWT caused by low-frequency fluctuations of the electron beam current. It is assumed that the upper limit of the fluctuation frequency is considerably below the signal frequency so that a calculation of the spectrum of low-frequency amplitude and phase noise can be conducted quasistatically, i.e., it can be reduced to a calculation of the indicated magnitudes which are determined by a static solution. The following conclusions were made on the basis of the investigation conducted: 1) The low-frequency fluctuations of the current lead to low-frequency fluctuations of the amplitude and phase of the output voltage of the TWT; 2) The basic sources of modulation of the low-frequency noise are the noise of current distribution and the ionization effect, and at sufficiently low frequency-- the flicker effect; 3) The spectrum of the amplitude and phase noise resulting from the low-frequency current fluctuations is significantly determined by the operating conditions of the TWT. Summary.

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UDC 621.[illegible].6

USSR

GOLUBENTSEV, A.F., TERSHOV, I.I.

"Minimizing The Noise Factor Of Beam Microwave Amplifiers As A Problem For The Theory Of Optimum Control (Summary Of Deposited Manuscript)"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 2, pp 84-85 (From RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8A141)

Translation: The problem of finding the minimum noise factor for a beam microwave amplifier is a typical variation of problems of the type of Mayer's problem, which in its turn can be reduced to a variation of the Lagrange problem on the conditional extremum. Utilizing the methods of the mathematical theory of optimum processes, based on use of the maximum principle of L. S. Pontryagin, it is possible to reduce a variational problem to a curve. The process of calculation is given for an optimum transformer consisting of two exponential transformers of space charge waves and the corresponding design of a low-noise electron gun which is most often realized in Type O microwave amplifiers. Systems of differential equations are obtained for the transformers being optimized, which are solved with the aid of a computer with piecewise continuous or a differentiable derivative of the distribution of the characteristic impedence with respect to the axis of the beam. 1 ref. G.B.

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USSR UDC 534

GOLUBENTSEV, A. N., LIKHOVID, P. I.

"On a Problem of the Optimization of Transfer Processes for Certain Mechanical Systems"

Dinamika i prochnost' mashin. Resp. mezhved. nauch.-tekhn. sb. (Machine Dynamics and Strength. Republic Interdepartmental Scientific-Technical Collection), 1971, No. 12, pp 90-95 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9A129)

Translation: The problem of optimization of the transfer process in a machine as a mechanical system consisting of a chain of discrete masses connected by elastic links is discussed. The problem reduces to solving a system of independent differential equations of a high order obtained from a system of differential equations of the motion of discrete masses of the system and written with respect to the elastic forces developed in the links during the transfer process. The equations of motion are integrated by constructing Cauchy integrals representing the response of the system to an external load of arbitrary form with preliminary substitution of the initial conditions of motion by an external load equivalent to them. It is shown what conditions the coefficients of the differential

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USSR

GOLUBENTSEV, A. N., LIKHOVID. P. I., Dinamika i prochnost' mashin. Resp. mezhved. nauch.-tekhn. sb., 1971, No. 12, pp 90-95

equation of motion (the parameters of the system) must satisfy in order that the maximum deviation of the elastic force with respect to its absolute value be the least under an external load limited with respect to the modulus. The problem is solved for the case when the characteristic equation has only purely imaginary roots. Authors abstract.

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USSR

UDC 531.8

GOLUBENTSEV, A. N., LOPATIN, A. K.

"On the Solution of Complex Problems in the Dynamics of Machines With Nonstationary Links"

V sb. Dinamika mashin (Machine Dynamics -- Collection of Works), Moscow, 1969, pp 105-107 (from RZh-Mekhanika, No 5, May 70, Abstract No 5A194)

Translation: The linear equations for the dynamics of machines with nonstationary links of complex kinematic structure are considered. A method of algebraic reduction is proposed through which one can expand the equivalent machine diagram into a series of more simple, unconnected diagrams. Necessary and sufficient criteria for the reduction are given. An example is discussed. Authors abstract.

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Polymers and Polymerization

UDC 678.06-419.8:677.521

USSR

GOLUBENKOVA, L. I., DEMEKHINA, YE. M., CHIBISOVA, YE. I., and NIKONOVA, S. N.

"Cements for Plexiglas Based on Epoxy-Novolak Resins"

Moscow, Plasticheskiye Massy, No 4, 1973, pp 12-14

Abstract: The strength characteristics of the bonding resins 6EN and 18EN were determined. These compounds contain 18-22% epoxy groups and have a drop depression temperature of 60-70°C. Addition of anilinephenol formaldehyde resin (211) to both 6EN and 18EN significantly improved the properties. The strength characteristics for both resins are similar and rather high at room temperature and up to about 200°C. However, the resin 6EN+211 is better suited to technical applications because impregnation of the plexiglass by the resin results in only a small change in the properties of the plexiglass.

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UDC 615.849.2.015.25.038

USSR

VLADIMIROV, V. G., DZHARAK'YAN, T. K., BERLIN, L. B., GOLUBENTSEV, D. A., and SMIRNOV, A. D., Military Medical Academy imeni S. M. Kirov, Leningrad

"Some Criteria for Evaluating the Effectiveness of Radioprotective Agents in Man"

Moscow, Meditsinskaya Radiologiya, Vol 16, No 9, Sep 71, pp 54-60

Abstract: Since cystamine hydrochloride effectivaly protects mice from radiation sickness, the dose given per unit of body surface was extrapolated to the average size of man, and a dose of 3 g was calculated (taken internally) as the probable, optimum protective dose for man. Tolerable doses of cystamine (0.8-1.2 gm) given to patients with pulmonary or pelvic tumors prior to single local treatments with x-rays and gamma-rays reduced the number of chromosome aberrations in myeloid cells and lymphocytes in the peripheral blood by 40%. Evidence indicates that a prophylactic intake of the tolerable dose of cystamine hydrochloride will significantly protect men in cases of accidental exposure to ionizing radiation.

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UDC 615.849.1.015.25.034.61

USSR

GOLUBENTSEV, D. A., MERKINA, T. N., MORDUKHOVICH, V. V., and TITOV, A. V.

"The Effect of Ionizing Radiation on the Excretion of Radioprotectors in Rats' Urine"

Moscow, Farmakologiya i Toksikologiya, Vol 35, No 5, Sep-Oct 70, pp 607-610

Abstract: Administration of sulfur containing radioprotectors such as β-mercaptoethylamine (MEA), cystamine, or cystophos in optimal doses to non-irradiated rats produces a sharp rise of non-protein thiols in the urine due to excretion of MEA. When cystamine is administered, the amount of MEA excreted in urine is twice as low as when MEA itself is used. Administration of sulfur containing protectors in combination with serotonin lowers considerably the excretion of non-protein thiols in urine. A whole body irradiation of rats at a dose of 700 r (LD 100/30) 5-10 min after administration of the radioprotector results in a drastic drop of the excretion of MEA. This indicates a change in metabolism due to the effect of radiation.

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USSR

UDC: 620.178.162

BABEY, YU. I., GOLUBETS, V. M., VYGOVSKIY, I. P., RYABOV, B. F., and GNATYSHAK, N. N.

"Effect of White Layer on Wear Resistance of 50X Steel"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 7, No 5, 1971, pp 7-10

Abstract: An experimental investigation of the effect of white layer on the wear resistance of 50X(0.49% C, 0.21% Si, 0.65% Mn; 1% Cr, 0.24% Ni) steel was conducted.

The white layer was formed by turning the specimen journal ring on the lath, with 88 meter/min cutting speed and 0.15 mm depth of cut, or by means of mechanical-ultrasonic treatment.

Test showed that the wear resistance of the specimens with white layer was equal to the ones, which were quenched at 850°C and drawn at 180°C. The wear of these specimens was about one third of the wear of unimproved specimens. The wear of the bronze and steel bushings rubbing against these specimens was reduced by about the same amount.

The white layer is formed by quenching and drawing due to the heat generated by the cutting tool.

The microradigraphic spectral analysis showed that the content of carbon,

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USSR

BAREY, YU, I., et al., Fiziko-Khimicheskaya Mekhanika Materialov, Vol 7, No 5, 1971, pp 7-10

chrome and other carbide-forming elements is higher in the white layer and lower in the sublayer than in the original metal.

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UDC 669.721.472(088.8)

USSR

ZUYEV, N. M., IVANOV, A. B., VUKOLOV, V. V., SHARUNOVA, G. M., KASHKAROV, A. Z., DONSKIKH, P. A., KOLESNIKOV, A. V., GOLUBEV, A. A., SPRYGIN, A. I., KOLESNIKOV, V. A., and KUZ'MIN, V. V., All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry, and Berezniki Titanium-Magnesium Combine.

"Device for Conveying Liquid Electrolyte and Magnesium"

USSR Authors' Certificate No 259396, Cl. 40c, 3/02; 40c, 3/08, (C 22d), filed 21 Oct 68, published 28 Apr 70 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 G250 P)

Translation: In order to utilize the heat of the exothermic reactions taking place during the mixing of reversible electrolyte with $MgCl_2$ and to preclude the consumption of electric energy for heating the main conveyer lines, a pipeline for conveying the reversible electrolyte and metallic magnesium was installed inside a trough-shaped channel to convey a magnesium chloride-enriched electrolyte, the pipeline being connected at one end with the last electrolyzer of the flow line, and at the other with a mixer, while the trough-shaped channel is connected with the lead electrolyzer and the mixer.

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Magnesium

UDC 669.721.472(088.8)

USSR

ZUYEV, N. M., KASHKAROV, A. Z., IVANOV, A. B., KOLESNIKOV, A. V., and GOLUBEV, A. A.

"Method of Transporting Electrolytes for the Production of Magnesium

USSR Author's certificate No. 263894, Filed 21/10/68, Published 8/06/70, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No. 1 G170 P)

Translation: The method includes utilization of a pipeline and pump. In order to avoid expending electric power to heat the pipelines by using the heat of the exothermic reaction occurring upon mixing of the circulating electrolyte with $MgCl_2$, the circulating electrolyte is fed to a mixer for enrichment with magnesium chloride through a pipe contained in a trough, while the electrolyte enriched with magnesium chloride is returned from the mixer to the electrolyzers through the trough.

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UDC: 621.373.444

USSR

GOLUBEV, A. D. and SHATS, S. Ya.

"Inductive Relaxation Circuits Using Secondary-Emission Tubes"

Moscow, Izvestia VUZ -- Radioelektronika, Vol. 25, No. 10, 1970, pp 95-98

Abstract: Details of the operation and the design of a relaxation oscillator involving an inductance in the dynode circuit of a secondary emission tube are given. The circuit operation is based on the fact that the static and dynamic dynode characteristics of the tube are N-shaped. Where this differs from other devices with similarly shaped characteristics, such as dynatrons and tunnel diodes, is that the initial section of the curve is horizontal rather than rising. Two circuit diagrams of the oscillator are given. The first is the simpler variety, the inductive relaxation circuit, whose principle of operation is based on the use of the static dynode characteristic. A more complex type is the second, the inductance-capacitance circuit, which generates pulses with practically even peaks. Its pulses can be made much wider or narrower than those of the conventional resistance-capacitance relaxation oscillator circuit. Oscillograms of the circuit's output pulses are shown.

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USSR

UDC 621.396.666(088.8)

GOLUBEV, A. D., KOLBASOV, G. V.

"Amplifier with Automatic Gain Control"

USSR Author's Certificate No 253169, Filed 6 Jul 67, Published 24 Feb 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D136P)

Translation: An amplifier with automatic gain control is proposed. In order to obtain signals with constant amplitude within a broad dynamic range at the output, a threshold device, a pulse expander and a pulse storage unit are connected in series to the automatic gain control circuit.

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Circuit Theory

USSR UDC: 621.374.5

GOLUBEV, A. G., PORTNOY, M. S., KHANOVICH, I. G.

"Effect Which the Relationship Between Acoustic Resistances of Component Elements in an Electromechanical Delay Line Has on the Amplitude-Frequency Response of the Line"

Tr. uchebn. in-tov svyazi, M-vo svyazi SSSR (Works of Educational Institutes of Communications. Ministry of Communications of the USSR), 1970, vyp. 49, pp 157-162 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2G313)

Translation: The authors investigate the way in which the width of the passband and signal attenuation are affected by the relationship between acoustic resistances in a piezoelectric converter and acoustic line (in the absence of an intermediate layer), and in addition the parameters of the amplitude-frequency response of the delay line are determined as a function of the relationship between the acoustic resistances of the piezoelectric converter and a solder (or cement) layer for the corresponding optimum condition. Bibliography of one title. Resumé.

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UDC 621.385.032.11:621.385.019.3

USSR

KRAPINA, M.A., SYTILIN, N.S., GOLUBEV, A.I.

"Partial Pressures Of Residual Gases In Long-Life TWTs"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue 9, pp 105-109 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1A94)

Translation: The spectrum was investigated of the residual gases in experimental electrovacuum devices (based on a traveling-wave tube) with a titanium non-pulverized getter, and without it. Pumping was conducted by mechanical forevacuum and highvacuum electrical discharge pumps. The spectrum of the residual gases was investigated on a IPDO-1 device with three regimes of the tube: in a cold state, with working voltage of the heater, and in a regime of current transmission at the collector. The basic components of the ambient gases in tubes with a getter were H_2 and Ag. The pressure of Ag with current selection was substantially decreased and the pressure of H_2 remained stable in all operating conditions. The total pressure of the residual gases in tubes in a cold state is $2 \cdot 10^{-8}$ mm mercury, and in a regime of current selection is $8 \cdot 10^{-9}$ mm mercury. Without a getter, the pressure was primarily determined by argon and amounted to

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USSR

KRAPINA, M. A., et al., Elektron. tekhnika. Nauchno-tekhn. sb. Elektron SVCh, 1970, Issue 9, pp 105-109 (from RZh--Elektronika i yeye primeneniye, No 1, Jan 1971, Abstract No 1A94)

2.5 . 10^{-8} mm mercury (in a cold state), and the pressure of CO amounted to 5 . 10^{-9} mm mercury. With switching on of the tube heater the CO pressured increased to 5 . 10^{-8} mm mercury. In passing to operating conditions the partial pressure of Ar was sharply decreased ($\sim$ 1/10) and the pressure of H_2 was increased from 3 .10^{-10} mm of mercury to 10^{-8} ÷ 10^{-7} mm or mercury. In TWT without built-in pumps and getters, a pressure of 2 . 10^{-8} mm of mercury was maintained because of the aperture in cathode which makes it possible to conduct more effective pumping of the gases. On the basis of the results of the tests of the long life of such tubes the conclusion is made that the atmosphere of residual gases, the basic components of which are H_2 (2. 10^{-8} mm mercury), CO (5 . 10^{-9}) and Ar (5. 10^{-9}) are favorable for TWT operation during many thousands of hours. 5 ill. 5 ref. G.B.

2/2

USSR

UDC 621.382.3

GOLUBEV, A.P., SALAKHUTDINOV, V.KH.

"Low-Frequency Small-Signal Parameters Of Silicon Planar Transistors In A Regime Of Microcurrents"

Sb.nauch.tr. po probl.mikroelektron. Mosk.in-t elektron.tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology), 1972, Issue 10, pp 169-174 (from RZh:Elektronika i yeye primeneniye, No 11, Nov 1972, Abstract No 11B254)

Translation: Theoretical dependences are obtained for calculation of the low-frequency small-signal parameters of silicon planar transistors in a regime of microcurrents, and the method of calculation is discussed. It is shown that the calculated values of the parameters agree well with the experimental. 3 ill. 5 ref. V.B.

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GOLUBEV, A.P.

Microelectronics

JPRS 57333

25 October 1972

MICROELECTRONICS

Excerpts from Russian-language book edited by F. V. Lukin; Mikroelektronika, No 5, 1972, Sovetskoye Radio Publishing House, Moscow, UDC 621.382:621.396.6-181.5.

CONTENTS

The article analyzes the coefficients of voltage transmission, the coefficient of suppression of the level (asynchronous component), the working mode, and the initial voltage of disbalance of differential amplifying cascades, done completely on MDP transistors.

The expressions obtained may be used for computation and planning of such cascades both in the discrete and in the integrated variations.

The article contains 1 figure and 2 bibliographic references.

UDC 621.382.31

Equivalent Circuits of an Integrated Transistor for Practical Computations of the Frequency Characteristics of Semiconductor Integrated Circuits. Golubev, A.P. and Malyshev, I.V. In the Collection Mikroelektronika, edited by F.V. Lukin, No 5, p [illegible], Sovetskoye Radio Publishing House, 1972.

On the basis of the previously suggested undetermined matrix of the conductivities of an integrated transistor the authors show the limited applicability of the ordinary rectangular equivalent circuit. A method is given for determining the components of a complex rectangular equivalent circuit of an integrated transistor through the coefficients of its matrix of conductivities. The experimental and computed frequency characteristics are cited for amplifiers in which the transistors are connected according to the following circuits: common collector - common base and common emitter - common base.

The article contains 3 figures, 2 tables, and 4 bibliographic references.

UDC 621.382.8

Difference Control Element for Sequential Integrated TTL Structures. Alekseenko, A.G., Kanotegov, V.A., Rotnov, S.V., and Shagurin, I.I. In the Collection Mikroelektronika, edited by F.V. Lukin, No 5, p 211, Sovetskoye Radio Publishing House, 1972.

The article cites the structural circuits of typical sequential circuits (triggers, counters, registers), the control of which is accomplished on the basis of a difference element shaping the impulse by switching of the cyclic signal and satisfaction of certain logic conditions on functional inputs. A variation is suggested for a difference control element, made on the basis of a transistor-transistor

UDC 612.133.08

USSR

LEBEDEV, V. P., and GOLUBEV, A. P., Laboratory of the Physiology of Blood Circulation, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"Recording Arterial Blood Pressure by Means of an Unspecialized Tape Recorder in a Form Suitable for Subsequent Digital Analysis"

Leningrad, Fiziologicheskiy Zhurnal, No 2, Feb 72, pp 285-286

Abstract: A general-purpose tape recorder which is not suitable for recording signals with a constant component has been adapted for use as a readily available intermediate storage unit to collect data for subsequent digital processing. For this purpose, the constant arterial-pressure curve is not recorded, but only its amplitude values; these, in the form of short pulses, can be taken down on an ordinary tape recorder. In this manner, it is also possible to record several processes on a single track by taking down several coordinates of different processes with a definite time sequence. When the same sequence is observed in the read-out process, separate digital measuresments of the several processes can easily be accomplished.

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USSR

UDC: 69.058.5

RUPPENEYT, K. V., DENISOV, V. N., TARASOVA, I. V., GOLUBEV, A. V., Scientific Research Institute of Foundations and Subterranean Structures

"A Method of Studying Rock Masses and Liners of Subterranean Structures"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar 72, Author's Certificate No 329417, Division G, filed 26 Jun 70, published 9 Feb 72, p 163

Translation: This Author's Certificate introduces a method of studying rock masses and liners of subterranean structures by measuring stresses in a drilled shaft. As a distinguishing feature of the patent, accuracy is improved by returning the rock mass to its initial position after measuring the stresses in the drilled shaft, using pickups to register the pressure in the rock mass.

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USSR

GOLUBEV, D., Doctor of Medical Sciences, Professor

"Viruses and Chromosomes"

Moscow, Nauka i Zhizn', No 10, Oct 70, pp 39-40

Abstract: The mutagenic effects of viruses on chromosomes were studied. Viruses are intracellular parasites, and upon penetrating into the cell continue to replicate. It is also known that viruses of infectious diseases can cause various disorders in the chromosome structure. The extent of these disorders depends on the number of viral particles in the cell and the degree of their toxicity. Laboratory experiments have established that these viruses can be mutagenic and capable of disorienting the hereditary apparatus. This, however, does not mean that in all cases of viral infectious diseases the virus-mutagens form a threat to future cellular generations. Not all of the indicated viruses are mutagenic. Furthermore, the greater the changes induced by viruses in cell chromosomes, the smaller the probability of survivial of these cells; they either simply perish or, upon mitosis, produce cells with little chance of survival.
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GOLUBEV, D., Nauka i Zhizn', No 10, Oct 70, pp 39-40

It may be definitely said that in most cases of viral infectious diseases, including influenza, ordinary measles, parotitis, and many others, all cells with damaged chromosomes gradually perish and thus present little threat of inducing hereditary abnormalities. There are a few exceptions, the best known of which is rubella. There are also viruses which, upon recovery of the patient, do not leave the organism, but remain there and reproduce in the cells. These, however, do not affect the chromosome structure.

USSR UDC 616.988.75+616.2-022.67-078:061.3(47)"1970"

GOLUBEV, D. B., Professor, and KAMFORIN, L. YE., Candidate of Medical Sciences

"Symposium on Express Diagnosis of Influenza and Acute Viral Respiratory Diseases by the Fluorescent Antibody Method"

Moscow, Voprosy Virusologii, No 6, Nov/Dec 71, pp 748-750

Abstract: The symposium was organized by Ministry of Health USSR and the All-Union Scientific Research Institute of Influenza in Leningrad on 13-15 May 1970. Seven long papers and 20 brief communications were presented, including: a review of FA (fluorescent antibody) research and its application in the USSR and abroad, by Prof. A. A. Smorodintsev; a report on the use of the IF (immunofluorescent) method in the diagnosis of influenza and acute respiratory diseases in Leningrad in 1968-1970, by Prof. D. B. Golubev; and a comparative evaluation of FA and cytological methods, by Prof. N. A. Maksimovich. The following recommendations were issued to the Ministry of Health USSR: 1) to specify the dates on which the various medical institutions must introduce IF methods in the diagnosis of acute respiratory diseases; 2) to increase the manufacture of the high-quality ML-3 microscopes, to reduce its price, and to supply it to all polyclinics and hospitals; 3) to manufacture adequate quantitites of standard diagnostic FA preparations; 4) to

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GOLUBEV, D. B., and KAMFORIN, L. YE., Voprosy Virusologii, No 6, Nov/Dec 71, pp 748-750

manufacture adequate numbers of mercury-quartz lamps; 5) to organize regular training courses in IF methods; and 6) to expand research on improving IF methods of diagnosing acute respiratory diseases.

2/2

GOLUBEV, D. B.

JPRS 55178

14 February 1972

SO: JPRS 55178
14 FEB 72

UDC 616.988.75-078.73:576.8.073.4

ACCURACY OF EXPRESS DIAGNOSIS OF INFLUENZA BY THE FLUORESCENT ANTIBODY PROCEDURE /.!-(Medicine)

[Article by L. Ye. Kamforin, G. V. Mayhoroda, Yu. M. Borshchevskiy, E.A. Zibina, N.A. Medvedeva, Yu. G. Ivannikov, and D.B. Golubev, All-Union Scientific Research Institute of Influenza, USSR Ministry of Health; Moscow, Voprosy Virusologii, No 6, 1971, submitted 30 November 1970, pp 718-721]

Liu first reported in 1956 the application of the fluorescent antibody method to diagnose influenza in humans [6]. Since then much attention has been given to the study of that question.

In the present paper an attempt is made to make clear the accuracy of the immunofluorescent method of diagnosis of influenza in comparison with the possibilities of serological diagnosis.

Material and Methods

The methods of making preparations of fluorescent antibodies and the procedure of immunoluminescent analysis have already been described [1,2,4].

As was shown by Buck and Gart [5], the accuracy of a diagnostic method is composed of its sensitivity S_1 and its specificity S_2. Sensitivity is the probability of making a correct diagnosis in a patient, and specificity is the probability of rejection of disease in a healthy person or a patient with another disease.

A study of the accuracy of the serological method of influenza diagnosis has been made on a group of volunteers on an experimental clinical model of influenza. In that case only those inoculated volunteers who gave a distinct clinical reaction were taken into consideration [1].

The accuracy of the immunofluorescent method was evaluated in the diagnosis of diseases during an epidemic of influenza in parallel with the indicated serological methods. In that case the sensitivity S_1 and specificity S_2

[I - USSR - C]

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UDC 576.858

USSR

SMORODINTSEV, A. A., and GOLUBEV, D. B., All Union Scientific Research Influenza Institute, Ministry of Health USSR

"The Problem of the Biological Nature of A Virus"

Moscow, Uspekhi Sovremennoy Biologii, Vol 69, No 2, Mar/Apr 70, pp 208-219

Abstract: This is a review article with 31 references on the molecular organization of viruses. Brief mention of the recent work of V. M. Zhdanov, Gaydamovich, A. F. Bykovskiy, N. A. Zeytlenok, Drtsenik, P. N. Kosyakov, M. B. Korolev, D. B. Golubev, and A. A. Smorodintsen are included.

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1/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--INFLUENCE OF THE COMPOSITION OF A REACTION MIXTURE ON M,XYLENE OXIDATION -U-

AUTHOR-(05)-ALEKSANDROV, V.N., GOLUBEV, G.S., GITIS, S.S., ZABELINA, G.V., SAVINOVA, V.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(5), 341-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--XYLENE, OXIDATION, ORGANOCOBALT COMPOUND, CATALYST ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0892 STEP NO--UR/0064/70/046/005/0341/0343

CIRC ACCESSION NO--AP0137920

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137920

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CO(OAC) SUB2 CATALYZED, BR INITIATED OXIDN. OF M,ME SUB2 C SUB6 H SUB4 (I) AT A CONCN. OF 2 MOLES-L. IN HOAC SOLN. BY AIR ADMITTED AT 150DEGREES AND UNDER 20 ATM PRESSURE WAS 0.2-0.5 ORDER IN BR, 1-2 ORDER IN CO, AND 1.7-0.4 ORDER IN I. THE ORDER IN FELL AS I CONCN. ROSE FROM 0.5 TO 2 MOLES-L. AT THE OPTIMAL CO,BR RATIO (2:1 TO 1:1), M,(HO SUB2 C) SUB2 C SUB6 H SUB4 (II) YIELDS WERE 86.9, 83.7, 71.2, 81.0, 79.0, 83.3, 85.8, AND 87.1PERCENT WHEN THE INITIATORS WERE NH SUB4 BR, CHBR SUB3, C SUB2 H SUB2 BR SUB4, P,(BRCH SUB2) SUB2 C SUB6 H SUB4, BR SUB2, HBRO SUB3, HBR, AND COBR SUB2, RESP. WHEN CO(OAC) SUB2 WAS REPLACED BY THE MN SALT, THE REACTION RATE WAS REDUCED AND II YIELDS WERE 49.9PERCENT, BUT WHEN MIXTS. OF THESE CATALYSTS WERE USED, REACTION RATES APPROACHED THOSE FOR CO(OAC) SUB2 CATALYZED OXIDN. AND II YIELDS WERE 80.8-7.0PERCENT.

UNCLASSIFIED

UDC 661.143:546.431'821'185(088.8)

USSR

GUGEL', B. M., LODYGIN, N. A., GOLUBEV, I. F., KHIZHA, V. S., BLYAKHMAN, E. A., KUTSENKO, N. A., SIDOROV, M. D., ZVYAGIN, V. B., VAKHRAMOV, V. P., AGAPOV, V. I., GARKUSHA, V. A., KHUSAINOVA, R. S.

"Phosphor for Low-Pressure Luminescent Tubes"

USSR Author's Certificate No 336342, filed 19 May 70, published 22 May 72 (from RZh-Khimiya, No 2(II), Feb 73, Abstract No 2L148P)

Translation: In order to increase the light yield of the tubes, the proposed phosphor includes the following: barium-titanium phosphate, calcium halophosphate, strontium and magnesium orthophosphate and magnesium fluorogermanate. The barium-titanium phosphate, the calcium halophosphate, the strontium orthophosphate, magnesium orthophosphate and magnesium fluorogermanate are introduced in the following proportions by weight: 4-6:2.5-4:0.4-0.8:0.13-0.25 respectively. As an example, let us take weighed samples of 4.36 kg of barium-titanium phosphate, 3.84 kg of calcium halophosphate, 0.40 kg of magnesium-strontium orthophosphate and 0.24 kg of magnesium fluorogermanate. Put them in a porecelain cylinder and mix for 1 hour. A suspension is prepared from the mixture obtained and it is applied to the tubes.

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002200930006-9"

UDC 661.143.046.4

USSR

GOLUBEV, L. F., MIRONOV, K. YE., TANANAYEV, A. N., and KINDZHIBALO, L. N.

"Chemical Transformations During Heating of Mixtures of $BaHPO_4$, TiO_2, BaF_2 and $(NH_4)_2HPO_4$"

Sb. nauch. tr. VNII lyuminoforov i osobo chist. veshchestv (Collection of Scientific Works of All-Union Scientific Research Institute for Phosphors and Ultrapure Substances), 1971, vyp. 6, pp 7-18 (English summary) (from RZh-Khimiya, No 14, 25 Jul 72, Abstract No 14L130 from summary)

Translation: A study was made by thermographic, roentgenographic and luminescent methods of analysis of the chemical interaction during heating of mixtures of $BaHPO_4$, TiO_2, BaF_2 and $(NH_4)_2HPO_4$. Formation of the luminescent phase of $2BaO \cdot TiO_2 \cdot P_2O_5$ from $BaHPO_4$ and TiO_2 begins at temperature > 800° with the phase transformation of Ba_2P_2O. On the addition of BaF_2 and $(NH_4)_2HPO_4$ below 400° barium metaphosphate is formed, which plays the role of flux in the formation of $2BaO \cdot TiO_2 \cdot P_2O_5$. Bibliography with nine titles.

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Acc. Nr: AP0044594 Ref. Code: UR0497

PRIMARY SOURCE: Klinicheskaya Meditsina, 1970, Vol 48, Nr 1, pp 21-26

BLOOD STREPTASE IN THE DIAGNOSIS OF RHEUMOCARDITIS IN PATIENTS SUFFERING FROM CARDIAC FAILURE AT REMOTE POSTOPERATIVE PERIODS

I. S. Golubev, S.YE. Yufit, A. V. Plyaskina

Summary

The authors describe the clinico-laboratory signs of rheumocarditis in 34 patients with rheumatic cardiac diseases at remote periods after the operation. By means of clinico-laboratory confrontations the authors stress the importance of the new test in the diagnosis of rheumocarditis. The authors are of the opinion that the streptase titer is a valuable auxiliary diagnostic test in the complex investigation of patients with active rheumocarditis, especially in its torpid course. One could assess the effectiveness of treatment by changes of the streptase titer in patients suffering from active rheumocarditis.

REEL/FRAME
19771270

GOLUBEV, L.I.

JPRS 59461

9 July 1973

UTILIZING THE REACTOR INSTALLATIONS AT THE NOVO-VORONEZH ATOMIC ELECTRIC POWER PLANT

Excerpts from Russian-language book by F. Ya. Ovchinnikov, L. M. Voronin, L. I. Golubev, et al.: Eksploatatsiya Reaktornykh Ustanovok Novo-Voronezhskoy AES, 1972, Atomizdat, Moscow, pp 1-70.

Contents

UDC 621.039.564.001.5

USSR

GOLUBEV, L. I. and LOKAKIN, S. S., Candidates of Technical Sciences

"Investigating Neutron Fields in the Novovoronezh Atomic Power Station Reactors"

Moscow, Teploenergetika, No. 10, 1971, pp 57-59

Abstract: Research into the neutron fields and their control in the process of atomic electrical power plants, as used in two water-moderated, water-cooled power reactors in the Novovoronezh Atomic Power Plant, are discussed. Both have an operating pressure of 100 kgs/cm^2. The service period of this type of reactor is determined by the service periods of its inner construction and its steel body, both of which are subject to the action of high-energy neutrons as well as force and temperature stresses. The article discusses the control systems of the neutron fields in the reactors and shows how the method of activation detection, as the most convenient one for intrareactor measurements, is used for measuring the parameters of neutron fields.

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CSO: 1860-W

- END -

UDC 621.315.598:546.28

USSR

GOLUBEV, L. V., VUL', A. Ya., and SHMARTSEV, Yu. V.

"Growth of Single Crystals of Gallium Antimonide Doped With Tellurium or Sulfur"

V sb. Protessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 485-493 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B123)

Translation: The preparation of single crystals of GaSb by the Czochralski method is described. Te, S, Sb_2S_3, GaS, and Ga_2S_3 were used for doping. Seeding was performed in the (111) plane. In order to decrease the density of dislocations, the diameter of the initial part of the crystal was decreased to 1.5 ÷ 2 mm at a length of 15 ÷ 20 mm which assured emergence to the crystal surface of dislocations germinating from the seed. With the introduction of elemental Te into the melt, single crystals of the n type were obtained with concentrations of free electrons of 10^{17}--$5 \cdot 10^{18}$. During doping by S, single crystals were obtained, 65-70 mm long with a diameter of 12-15 mm. The resistivity for p-type ingots amounted to 0.1--(2 ÷ 3) ohm.cm for different crystals. Crystals of the n-type had a resistivity from 0.1 to several tens of ohm.cm. The density of dislocations did not exceed 10^2--10^3 cm^{-2}. It is determined that S as a doping impurity is found in the lattice in active and nonactive states. Doping of the melt by elemental S from the gaseous phase or a compound leads only to an insignificant compensation of the material. In order to

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USSR

GOLUBEV, L. V., et al., Protessy rosta kristallov i plenok poluprovodn. (Procedures for the Growth of Semiconductor Crystals and Films -- Collection of Works), Novosibirsk, 1970, pp 485-493 (from RZh-Elektronika i yeye primeneniye, No 7, July 1971, Abstract No 7B123)

obtain n-type GaSb it is necessary to introduce into the melt an excess of Ga, filling vacant places in the sublattice of Ga. Use of the compounds GaS and Ga_2S_3 gives the best results as alloys. 7 ref. N.Sh.

2/2

UDC 612.014.21.015.12:(616.12:612.273.2.017.2

USSR

MEYERSON, F. Z., PANCHENKO, L. F., GOLUBEVA, L. Yu., LYUBIMTSEVA, O. N., and PORTENKO, N. G. Laboratory of Experimental Cardiology Institute of Normal and Pathological Physiology USSR, and Chair of Biochemistry Medicobiological Faculty, Second Moscow Medical Institute imeni N. I. Pirogov

"The Role of the Lysosome System in the Prophylactic Effect of Adaptation to High-Altitude Hypoxia in Disorders of the Heart"

Moscow, Kardiologiya, Vol 10, No 7, Jul 70, pp 71-79

Abstract: It was previously determined that systematic adaptation of animals to intermittent high-altitude hypoxia increases the resistance of the heart to acute stress. In an extension of this work, the lysosome systems containing protein hydrolases (e.g., DNA-ase, RNA-ase, and phosphatase) were studied, using trained and untrained rats. In trained animals, sudden high-altitude hypoxia was found to result in a general increase in the levels of the three lysosome protein ases (to 124-135%), a decrease in the content of free protein ases (68.4-81.5%) and a marked increase in the level of bound protein ases (244-268%). In untrained animals, levels of all protein ases decreased except the level of bound RNA-ase, which increased to 140.2%. Similar results were obtained in the latter group under conditions of coarctation. Sudden hyperfunction of the heart in trained animals

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USSR

MEYERSON, F. Z., et al., Kardiologiya, Vol 10, No 7, Jul 70, pp 71-79

results in a release of free protein ases and a decrease in other ases. It is generally concluded that the binding of protein ases resulting from intermittent adaptation to high-altitude hypoxia increases the resistance of the cardiac lysosome system to acute stress.

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USSR

GOLUBEV, N. A., ZHUKOVSKIY, Ye. L., POKROVSKIY, N. L.

"Study of Surface Tension of Solutions in the System Indium-Bismuth"

Issledovaniye Poverkhnostnogo Natyazheniya Rastvorov Sistemy Kidiy-Vismut [English Version Above], Moscow, 1971, 9 pages (Translated from Referativnyy Zhurnal, Khimiya, No 2, 1972, Abstract No 2 B1357 Dep. by the author's).

Translation: The method of maximum pressure in a drop is used to measure the surface tension σ of solutions in the system In-Bi in the range of concentrations from 0 to 100% of both components and in the temperature interval 200-500°. It was discovered that the isotherms do not experience any anomalies in the area of concentrations corresponding to the intermetallic compounds In_2Bi, InBi and the eutectic. The equation of Shishkovskiy is used for analytic description of the isotherm. This equation was solved on the M-20 computer. It was found that it describes the course of the isotherm σ for the entire area of concentrations of In-Bi solutions well. The polytherms of σ for these solutions are linear and have a negative temperature coefficient.

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AA0043572 . GOLUBEV N.N UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 2/70

243863 FLOWMETER for determining the flow of liquid, gas or steam comprises an electric winding, a ferromagnetic shaft and a turning element such as a rotating impeller, which absorbs the dynamic pressure of liquid. The modified flowmeter is of a simpler design, since its signal receiving block is in the form of an electric winding connected to a source of AC of sonic frequency, or to a measuring device, depending on the connection of the ferromagnetic shaft.

The rotary vanes are fixed to the ends of the ferromagnetic shaft 2, which passes through winding 3 with conductors 4. The shaft ends are connected to current conductors 5. Shaft 2 is fixed to housing 6.

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Under the action of the flow, the vane wheel turns to turn and turns shaft 2. In event of connecting conductor 4 of winding 3 to the feed of 14 to 25 h. of sonic frequency on the clamps of the conductors 5 of shaft 2 an outgoing signal proportional to the flow goes into action.

28.2.68 as 1221403/18-10. N.N.GOLUBEV & E.F.FURMAK-OV. (30.9.69) Bul 17/14.9.69. Class 42e. Int.Cl. G 01f.

19762036

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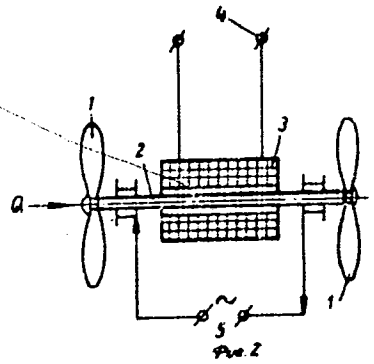
AA0043572



Фиг. 2

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19762037

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UDC 616.981.452-022.39-036.23-078.7(479)

USSR

CHERCHENKO, I. I., OGANYAN, Ye. F., YUNDIN, Ye. V., NAYDEN, P. Ye., YEMEL'YANOV, P. F., GOLUBEV, P. D., FILIMONOVA, Yu. A., GONCHAROV, A. I., LABUNETS, N. F., BABAYEV, M. R., ANANYAN, Ye. L., and KHANGULYAN, E. K., Scientific Research Antiplague Institute of the Caucasus and Transcaucasus, and Antiplague Stations, Azerbaydzhan SSR and Armenian SSR

"Experience in Serological Detection of Plague in Rodent Nest Substrate and in Predatory Bird Pellets Under Field Conditions in Natural Foci of the Caucasus"

Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, No 3, 1973, pp 15-20

Abstract: Use of the antibody neutralization reaction (ANR) employing plague antigenic erythrocyte diagnosticum was studied as a serological alternative to detection of plague by bacteriological analysis, for which it is not always possible to gather test material in the field. The study was based on the experimental finding that plague F1 antigen persists in the environment long after an epizootic has subsided. In the first phase, three areas in the Caucasus in which epizootics had been registered previously were studied in 1969-1971. Samples of rodent nest substrate were found to contain F1 antigen by the ANR, whereas bacteriological methods were generally unsuccessful,

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CHERCHENKO, I. I., et al., Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, No 3, 1973, pp 15-20

indicating the usefulness of this method for retrospective analysis. In the second phase an area in which epizootics had not been recorded previously was studied in 1970-1971. While the ANR revealed the presence of F1 antigen in rodent nest substrate, bacteriological analysis did not produce such evidence until 4 months later. This result indicated that the method is also preferential for early detection of plague epizootics. In the final phase pellets regurgitated by predatory birds feeding on plague-carrying rodents were subjected to the ANR. Once again F1 antigen was detected in areas without previous epizootic history up to 2 months prior to detection by bacterial analysis. As a control pellets from an area known to be free of plague for 40 years was subjected to the ANR, and the results were negative. Thus the ANR is shown to be a suitable and preferential method for retrospective and early field detection of natural plague foci.

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USSR UDC 616.981.452-022.39:595.775.1]-078.7+576.851.45.095.38:576.895.775

CHERCHENKO, I. I., OGANYAN, Ye. F., YUNDIN, Ye. V., ANANYAN, Ye, L., KHANGULYAN, E. K., GOLUBEV, P. D., and GONCHAROV, A. I., Scientific Research Antiplague Institute of the Caucasus and Transcaucasus and Armenian Antiplague Station, Ministry of Health USSR

"Experience in Serological Examinations of Fleas of Rodents for Plague"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 1, 1973, p 137

Abstract: The minimum number of infected fleas required for a positive serological result is not more than 5 in a mixture with 25 noninfected specimens. The results of serological tests are available within 24 hrs after infection of the test fleas if they are kept at 25°C in a 2% NaCl solution containing 0.002% gentian violet and 1% formalin which effectively extracts plague pathogen Fl antigen from the tissue of the insects and preserves it for at least 15 days. The solution with or without the fleas can be used for the serodiagnostic test which involves neutralization of antibodies with standard plague antigenic erythrocyte diagnosticum. The method was verified in field work. In the summer of 1969, 65 samples containing a total of 2,377 fleas collected from field mice and their holes in Transcaucasia were analyzed with both methods in parallel. The serological method detected antigen Fl in 57 samples, while the

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USSR

CHERCHENKO, I. I., et al., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 1, 1973, p 137

bacteriological method yielded cultures of plague pathogen in only 21 samples. In summer 1971, positive results were obtained by the serological method in 24% of samples of fleas collected from gophers in the Caucasian Mountains. Subsequently, the bacteriological method used in October 1971 yielded positive results for the first time in that region. The faster and more sensitive serological method is recommended for territorial surveys of plague pathogen.

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Biochemistry

UDC 632.95

USSR

GOLUBEV, T. I., VOLKOVA, V. A.

"Investigation of the Biological Path of Conversion of Chlorophos to DDVP"

Byul. VNII zashchity rast. (Bulletin of the All-Union Scientific Research Institute of Plant Protection), 1970, No 15, pp 55-60 (from RZh-Khimiya, No 2, 25 Jan 71, Abstract No 2N526)

Translation: In order to study the metabolism of chlorophos in the tissues of mice, shield bugs and wheat seedlings, a method is developed for determining concentrations of chlorophos and DDVP in biological media. The procedure consists of separation of these products by thin-film chromatography on silica gel and colorimetric determination of the activity of acetylcholine when it is inhibited by chlorophos and DDVP. In this connection, DDVP is not observed in experiments in vivo and in vitro, which indicates that chlorophos is metabolized in the tissues of plants, insects and animals without conversion to DDVP.

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UDC 632.951:595.786

USSR

NOVOZHILOV, K. V., SMIRNOVA, I. M., and GOLUBEV, T. I., All-Union Institute for the Protection of Plants

"Possible Use of Organophosphorus Preparations in the Protection of Wheat against Grain Cutworm and Wheat Thrips"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 3, 1971, pp 38-41

Abstract: Most effective in the protection of wheat against grain cutworm and wheat thrips were chlorophos, methylnitrophos, and metaphos. The effectiveness of these compounds against eggs of the above pests was established in the laboratory. Chlorophos and metaphos (at a concentration of 1.35%) were most effective against insect eggs in a series of field tests. Also determined, were chlorophos and methylnitrophos residues on mature wheat plants. Another test series was run to determine the effectiveness of these compounds at lower concentrations (0.5 and 1%) against caterpillars of the grain cutworm. Methylnitrophos and chlorophos were found to be most active against older caterpillars. It was concluded that both methylnitrophos and chlorophos can be safely used for grain to protect wheat against caterpillars of the grain cutworm.

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GOLUBEV, V.

MEDICINE

XIII DESIGN BUREAUS, MINISTRIES, NUMBERED MIL's

1. USSR

"Central Design Bureau, USSR Academy of Medical Sciences"

Moscow, Meditsinskaya Gazeta, 12 Feb 71, p 3

Translation: The Central Design Bureau and the Experimental Plant of the USSR Academy of Medical Sciences have developed and manufactured several original devices for scientific research.

Ultraviolet Spectrometer

This device is designed to provide continuous measurement of the concentration of ultraviolet rays which solutions permit to pass through during column chromatography. It makes it possible to determine the content of matter in a solution possible areas a plate by registering light absorption in the ultraviolet range of the spectrum (for example, nucleoin derivatives, proteins, and aromatic compounds).

The external automatic recorder registers the signal from a collector, due to which it is possible to regulate the exchange of fractions not by time, but by changing the concentration of matter in the solution. This instrument, created by a

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Meditsinskaya Gazeta, 12 Feb 71, p 3

worker collective headed by Kardiston, envisages the possibility of measuring changes in electric conductivity in a flowing liquid. The densitometer is already being turned out in small series.

The Cell

A device called "The Cell" has been developed at the Central Design Bureau for extended and continuous suspension cultivation of mammal cells during biological research.

The device makes it possible to cultivate cells in circulating gas environments with an assigned temperature and humidity. The new device is already being used at a number of scientific research institutes of the USSR Academy of Medical Sciences

Kardiston

A group of engineers headed by V. Golubev has created the unique instrument "Kardiston" for the USSR Academy of Medical Sciences' Institute of Surgery imeni A. V. Vishnevskiy. It is used for operational diagnosis of diseases of the cardiovascular system. It performs semi-automatic, synchronous, six-channel coding of electrocardiograph data. The instrument provides economical codification and reliable information on perforated tape for subsequent feeding into a computer.

The "Kardiston" makes it possible to single out particular sectors of the electrocardiogram for each of its six leadoffs, and may be used in clinics and laboratories for machine diagnosis of diseases of the cardiovascular system.

1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--NEAR THE THRESHOLD OF THE ENERGY OF THE FUTURE -U-

AUTHOR--GOLUBEV, V.

6

COUNTRY OF INFO--USSR

SOURCE--PRAVDA UKRAINY, JULY 30, 1970, P 4, COLS 2-5

DATE PUBLISHED--30JUL70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CONTROLLED THERMONUCLEAR REACTION, PLASMA HEATING, TURBULENT PLASMA, PLASMA CONFINEMENT, PLASMA STABILITY/(U)TOKAMAK 3 THERMONUCLEAR DEVICE, (U)URAGAN 1 THERMONUCLEAR DEVICE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0507 STEP NO--UR/9013/70/000/000/0004/0004

CIRC ACCESSION NO--AN0124210

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AN0124210

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE GIVES A BRIEF REVIEW OF THE CONTROLLED FUSION REACTION RESEARCH CONDUCTED IN THE SOVIET UNION. CREDIT IS GIVEN TO ACADEMICIAN L. ARTSIMOVICH, WHO IN THE EXPERIMENTS HE GUIDED IN THE INSTITUTE OF ATOMIC ENERGY IMENI KURCHATOV, PRODUCED PLASMA IN TOKOMAK-3 WHOSE PARAMETERS WERE CLOSE TO BEING THERMONUCLEAR. L. LANDAU, AND HIS KHAR'KOV SCHOOL, A. AKHIYEZER, MEMBER OF THE UKRAINIAN ACADEMY OF SCIENCES, YA. FAYNBERG, CORRESPONDING MEMBER, ARE GIVEN CREDIT FOR LAYING THE FOUNDATION FOR PLASMA ELECTRONICS. IT IS CLAIMED THAT THE THEORY OF TURBULENT HEATING OF PLASMA HAS BEEN DEVELOPED AT THE LABORATORY OF DOCTOR K. STEPANOV. CANDIDATE OF PHYSICAL MATHEMATICAL SCIENCES V. ALEKSIN HAS BEEN WORKING ON NEW MAGNETIC SYSTEMS FOR HOLDING PLASMA. THE PROBLEMS IN HOT PLASMA STABILITY ARE BEING WORKED ON AT THE INSTITUTE OF NUCLEAR RESEARCH IN KIYEV UNDER THE DIRECTION OF DOCTOR V. ORAYEVSKIY. TOKOMAK AND URAGAN-1, DEVELOPED IN MOSCOW AND KHAR'KOV, RESPECTIVELY, ARE COMPARED. CANDIDATES OF PHYSICAL MATHEMATICAL SCIENCES V. ZYKOV, N. NAZAROV, V. SIZONENKO, V. SUPRENENKO, AND O. SHVETS, ALL OF THE PHYSICAL TECHNICAL INSTITUTE OF THE UKRAINIAN ACADEMY OF SCIENCES, ARE SAID TO HAVE MADE SIGNIFICANT CONTRIBUTIONS WHICH HAVE MADE IT POSSIBLE TO OBTAIN PLASMA WITH TEMPERATURES UP TO 20,000,000DEGREES (HIGH FREQUENCY HEATING) AND 15,000DEGREESC (TURBULENT METHOD). IT IS SAID THAT UKRAINIAN SCIENTISTS HAVE LAUNCHED THE THIRD STAGE OF COMPREHENSIVE EXPERIMENTS UNDER THE DIRECTION OF DOCTOR V. TOLOK, WHO BELIEVES THAT THE END GOAL OF THIS STEP IS THE CONSTRUCTION OF THE PHYSICAL MODEL OF A THERMONUCLEAR REACTOR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--INTERACTION OF IMINOXYL RADICALS WITH CHLORINE -U-

AUTHOR--GOLUBEV, V.A., ZHDANOV, R.I., ROZANTSEV, E.G.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 184-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, ORDNANCE

TOPIC TAGS--IMINE, CHLORINE, HETEROCYCLIC NITROGEN COMPOUND, METHYLENE, THERMAL DECOMPOSITION, EXPLOSIVE, POLYNUCLEAR HYDROCARBON, ORGANIC NITRO COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/2665 STEP NO--UR/0062/70/000/001/0184/0185

CIRC ACCESSION NO--AP0200269
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0200269
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDING CL WITH DRY ICE COOLING TO I -IN CCL SUB4 GAVE THE FOLLOWING II (Z SHOWN): CH SUB2 DECOMPD. 118, 19DEGREES; CHOBZ, DECOMPD. 86 TO 8DEGREES; CHCL, DECOMPD. 130-19DEGREES; C:O, DECOMPD. AT ROOM TEMP. EXPLOSIVELY. SIMILARLY WAS PREPD. III, ORANGE SOLID WHICH SLOWLY DECOMPD. AT ROOM TEMP.

ZZZZZZZZZZZZ UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--11SEP7

TITLE--SYNTHESIS AND STRUCTURE OF 1,OXOPIPERIDINIUM TRIBROMIDES -U-

AUTHOR--ZHDANOV, R.I., GOLUBEV, V.A., ROZANTSEV, E.G.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSR, SER. KHIM. 1970, (1), 186-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, BROMINATED ORGANIC COMPOUND, MOLCULAR STRUCTURE, HETEROCYCLIC NITROGEN COMPOUND, THERMAL DECOMPOSITION, UV SPECTRUM, NMR SPECTRUM, BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/1596 STEP NO--UR/0062/70/000/001/0186/0187

CIRC ACCESSION NO--AP0100209
UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0100209

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION OF I (Z EQUALS CH SUB2) IN CCL SUB4 WITH BR WITH DRY ICE COOLING GAVE 99PERCENT RED 2,2,6,6, TETRAMETHYL, 1, OXOPIPERIDINE TRIBROMIDE, DECOMPD. 88.5-9.5DEGREES; I (Z EQUALS CHOH) GAVE 2,2,6,6,TETRAMETHYL,4,HYDROXY,1,OXOPIPERIDINE TRIBROMIDE, DECOMPD. 188-9DEGREES; I (Z EQUALS CHBR) GAVE 2,2,6,6,TETRAMETHYL,4,BROMO,1,OXOPIPERIDINE TRIBROMIDE, DECOMPD. 106-7DEGREES; I (Z EQUALS CHOBZ) GAVE 2,2,6,6,TETRAMETHYL,4, BENZYLOXY,1,OXOPIPERIDINE TRIBROMIDE, DECOMPD. 96-7DEGREES; I (Z EQUALS CO) GAVE 2,2,6,6,TETRAMETHYL,1,4,DIOXOPIPERIDINE TRIBROMIDE, VIOLET, DECOMPD. 67-8DEGREES. REACTION OF II WITH BR GAVE BIS(4,(2,2,6,6,TETRAMETHYL,1,OXOPIPERIDINE TRIBROMIDE)) PHTHALATE, DECOMPD. 43-5DEGREES. UV SPECTRAL CURVES OF TYPICAL PRODUCTS ARE SHOWN. THUS I AND II ARE OXIDIZED BY BR AT LOW TEMP. TO DIAMAGNETIC PRODUCTS WITH 3 BR ATOMS; THE ABOVE STRUCTURES WERE CONFIRMED BY NMR AND IR SPECTRA.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002200930006-9"

GOLUBEV, V.A.

AA0052656 UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 3-70

244817 TWO-SIDED HYDRAULIC DAMPER consists of two parts; 1 and 2 bolted together and mounted on base 3. It is filled with working medium under atmospheric pressure and connected by pipelines with additional chambers 4 and 5. The body contains a number of chambers with pistons 6 and 7 connected between themselves by crosspieces 8 and 9 which in turn are rigidly connected to rod 10. All the chambers are interconnected and each contains free piston which divides two media (air and fluid). The air medium communicates with the atmosphere through the non-return valve. Crosspieces 8 and 9 are connected to suitable guides 15 and 16. The pressure is transmitted to pistons 6 and 7 through the flange, thrust ball 17, rod 10 and crosspieces 8 and 9. 1.2.68. as 1214193/25-28. V.A.GOLUBEV et al. (9.10 69.) Bul.18/28.5.69. Class 47a. Int.Cl. F16f.

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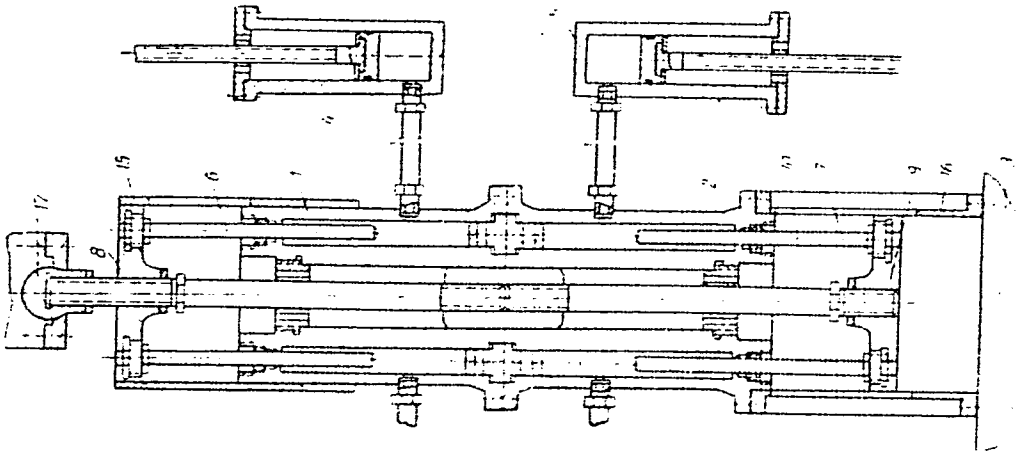
19821395

AA0052656

Morozova, Z.I.; Nugayev, R.A.;
Prokof'yeva, M.M.; Golubev, V. A.; Zhuravlev, A. M.



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19821396

USSR UDC 621.373:530.145.6

GOLUBEV, V. A., KLINSHIN, V. F.

"Investigation of the Parameters of a High-Temperature Source at High Pressures"

V sb. Primeneniye plazmatrona v spektroskopii (Use of the Plasmatron in Spectroscopy--collection of works), Frunze, "Ilim", 1979, pp 70-75 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D217)

Translation: An experimental investigation is made of the electric and heat parameters of an electric arc in argon at high pressure. Data are given on the emission intensity of argon at pressures of 10-150 atmospheres. The average electrical conductivity of the plasma with respect to the cross section of the arc column is estimated. Three illustrations, bibliography of eight titles. Resumé.

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USSR

UDC 541.15'+541.183.03

GOLUBEV, V. B., KOLBANOVSKIY, YU. A., LEBEDEV, S. N., MASTEROVA, M. N., POLAK, L. S., Institute of Petrochemical Synthesis imeni A. V. Topchiyev, Moscow, Academy of Sciences USSR

"Process Kinetics of the Annealing of Adsorption and Paramagnetic Centers Generated by Radiation on the Surface of γ-Al_2O_3, as Studied by the Monte Carlo Method"

Moscow, Khimiya Vysokikh Energiy, Vol 4, No 5, Sep-Oct 70, pp 439-442

Abstract: The Monte Carlo method was used for a kinetic study of the annealing of the adsorption and paramagnetic centers formed by gamma radiation on the surface of γ-Al_2O_3. The following initial data were used for computer-aided analysis of the experimental data by the Monte Carlo method: 1) kinetic curves for the thermal annealing of the adsorption and paramagnetic centers; 2) dependence of the number of radiation-induced defects on annealing temperature for the paramagnetic and adsorption centers. The trap depth distribution was assumed to be exponential. It was

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USSR

GOLUBEV, V. B., et al, Khimiya Vysokikh Energiy, Vol 4, No 5, Sep-Oct 70, pp 439-442

found that the minimum trap depth does not exceed 4 kT. The total kinetic annealing curve is the result of the superimposition of a large number of exponents on each other, each corresponding to traps with a different depth in the forbidden gap. The annealing kinetics of the adsorption and paramagnetic centers were found to be the same, which argues in favor of the authors' theory that the centers are identical.

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UDC 541.15

USSR

BUGAYENKO, L. T., ZADOR, E., BELEVSKIY, V. N., GOLUBEV, V. B., Moscow State University imeni M. V. Lomonosov, Moscow, Ministry of Higher and Secondary Specialized Education RSFSR

"Isotope Effect in Radiolysis of Frozen Aqueous Solutions of Acids"

Moscow, Khimiya Vysokikh Energiy, Vol 4, No 5, Sep-Oct 70, pp 468-469

Abstract: The article describes results of a study of the isotopic enrichment of atomic hydrogen in frozen solutions of perchloric (2.4 M) and sulfuric (3.9 M) acids. Within the accuracy limits of relative EPR measurements (20 percent) the isotopic enrichment factor is practically constant over the entire investigated range of isotopic composition and equals 2.0 ± 0.4, which is considerably lower than in liquid solutions.

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1/3 029 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--KINETICS OF THE LOSS OF SILVER ATOMS ADSORBED ON SILICA GEL -U-

AUTHOR-(04)-POPOVICH, G.A., LUNINA, YE.V., GULUBEV, V.B., YEVDOKIMOV, V.B.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 517-20

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--SILVER NITRATE, SILICA GEL, CHEMICAL KINETICS, EPR SPECTRUM, ADSORPTION, IRRADIATION, ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1237 STEP NO--UR/0076/70/044/002/0517/0520

CIRC ACCESSION NO--AP0123199
UNCLASSIFIED

2/3 029 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--APO123199

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SAMPLES PREPD. BY SHAKING CARRIER WITH AGNO SUB3 SOLN. IN WATER FOR 3 HR, WERE WASHED WITH DISTD. WATER, DRIED AND IRRADIATED BY X OR GAMMA RAYS, AT MINUS 196DEGREES. SYNTHETIC SILICA GEL CORRESPONDING TO A SURFACE OF 660 M PRIME2-G AND ALUMINO SILICATE CONTG. AL SUB2 O SUB3 (12 AND 25PERCENT) CORRESPONDING TO THE SURFACES OF 400 AND 350 M PRIME2-G WERE USED AS CARRIERS. INDUSTRIAL SILICA GEL SAMPLES WERE ALSO USED. THE TEMP. WAS VARIED BY CHANGING THE TEMP. OF N SUB2 FLOWING THROUGH THE RESONATOR. EPR SPECTRA OF STABILIZED AG ATOMS ON THE SURFACE SHOWED 2 DOUBLETS OF ISOTOPES PRIME107 AG AND PRIME109 AG. CONSTS. OF HYPERFINE SPLITTING DECREASED IN THE CASE OF IRRADIATED SPECIMENS FROZEN IN SOLN. DOUBLETS WERE ALSO FOUND DURING IRRADN. OF AGNO SUB3 SOLN. HYPERFINE SPLITTING CONSTS. DEPEND UPON TEMP.; AT MINUS 170DEGREES, THEY DECREASED TO SIMILAR TO 40 OE. SPLITTING CONSTS. OF ATOMS STABILIZED ON THE SURFACE WERE INDEPENDENT OF TEMP. PERCENT RELATIVE CHANGE IN SPLITTING CONSTS. IS EXPRESSED AS DELTA(DELTAV)-DELTAV SUBFREE WHERE DELTA(DELTAV) EQUALS DELTAV MINUS DELTAV SUBFREE. DELTAV AND DELTAV SUBFREE ARE SPLITTING CONSTS. OF STABILIZED AND FREE ATOMS OF THE ISOTOPES BEING STUDIED. CHARACTERISTIC CURVES FOR THE LOSS OF AG ATOMS AT MINUS 140DEGREES ADSORBED ON SILICA GEL AND STABILIZED IN FROZEN SOLN. ARE GIVEN. THE EFFECTS OF TEMP. AND RATE OF MELTING ARE CONSIDERED. IT IS ASSUMED THAT DURING IRRADIATION, ENERGIZED TRAPS ARE FORMED IN THE CARRIER. DURING HEATING OF THE SPECIMEN, SOME OF THE ELECTRONS ARE SET FREE WHICH ARE RESPONSIBLE FOR THE REDN. OF SOME OF THE AG PRIMEPOSITIVE IONS TO AG ATOMS.

UNCLASSIFIED

3/3 029 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123199

ABSTRACT/EXTRACT--FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--REACTION OF MONOMERS WITH CARBONYL OR NITRILE GROUPS WITH METALS AND SOME REACTIONS OF THE RESULTING ANIONRADICALS -U-
AUTHOR-(05)-PANASENKO, A.A., GOLUBEV, V.B., ZUBOV, V.P., KABANOV, V.A., KARGIN, V.A.
COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 865-72

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MONOMER, CARBONYL RADICAL, NITRILE, SODIUM, MAGNESIUM, ACRYLATE, ACETONE, BENZOIC ACID, FREE RADICAL, OLIGOMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0683 STEP NO--UR/0459/70/012/004/0865/0872

CIRC ACCESSION NO--AP0124355
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0124355
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VAPORS OF NA OR MG WERE CONDENSED ON A SURFACE, COOLED WITH LIQ. N, TOGETHER WITH THE VAPORS OF ME METHACRYLATE, ME ACRYLATE, ME BUTYRATE, ET BENZOATE, ACH, ETCHO, ISO PRCHO, TERT BUCHO, ACROLEIN, ACETONE, H SUB2 C:CHCN, H SUB2C:CMECN, OR ETCN. THE CONDENSATE CONTAINED FREE RADICALS. THE REACTIONS OF THESE MONOMERS WITH NA OR MG GAVE ANION RADICALS, SUCH AS (ME SUB2 CO), WHICH INTIATED THE OLIGOMERIZATION BY ANIONIC MECHANISM. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--REMOVAL OF METALLIC MERCURY FROM WORKING AREAS -U-

AUTHOR-(02)-GAVRIKOV, L.A., GOLUBEV, V.G.

6

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 266,727

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE, ZNAKI 1970,

DATE PUBLISHED--01APR70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MERCURY, CHEMICAL PATENT, HYDROGEN PEROXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1076 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0130111

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 015

CIRC ACCESSION NO--AA0130111

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. METALLIC HG WAS REMOVED WITH A DEGASSING AGENT, SUCH AS AN AQ. H SUB2 O SUB2 SOLN., TO ELIMINATE THE USE OF TOXIC OR CORRODING SUBSTANCES.

UNCLASSIFIED

USSR

UDC 582.282.23.094.85.088.7

GUZEV, V. S., GOLUBEV, V. I., and ZVYAGINTSEV, D. G., Chair of Soil Biology, Faculty of Soil Biology, Moscow State University imeni M. V. Lomonosov, Moscow

"The Detection of Microcapsules in Microorganisms and the Control of Their Complete Decapsulation by Microelectrophoresis"

Moscow, Mikrobiologiya, Vol 41, No 1, Jan/Feb 72, pp 115-120

Abstract: Strain No 943 of yeast Cryptococcus albidus var. diffluens was used in the study. An acapsular strain was obtained by multiple transfers and growths of the original strain on wort agar. Complete decapsulation was performed by autoclaving of the culture in an acetic acid solution at pH 4. Electrophoretic mobility was estimated using microelectrophoresis in a closed chamber. The effect of pH was studied using modified McIlvein's citrate-phosphate buffer of an ionic strength 0.02. The maximal electrophoretic mobility (2.7 micron/second/volt/centimeter) was obtained at pH 7.8. The mobility decreased at lower pH values. Both capsular and acapsular strains had identical mobility, which indicated the identity of their surfaces. The presence of a microcapsule (less than 0.4 micron) on the so-called acapsular strain was confirmed by electron microscopy. On the other hand, a strain completely decapsulated had a different electrophoretic mobility (+0.25

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R002200930006-9"

USSR

GUZEV, V. S., et al., Mikrobiologiya, Vol 41, No 1, Jan/Feb 72, pp 115-120

micron/second/volt/centimeter) than the parent strain (-0.2 micron/second/volt/centimeter) at pH 1.7. The differences in electrophoretic mobility decreased with increased pH. Microelectrophoresis is a simple and convenient method for the detection of microcapsules undetectable by optical microscopy or by chemical methods. A control capsular strain is necessary for the test.

2/2

USSR UDC: 537.31

POLYAKOV, N. N., KUKUY, A. S., GOLUBEV, V. I., PAVLOV, N. I., Gor'kiy Physicotechnical Research Institute

"Checking the Homogeneity of Semiconductor Single Crystals From Measurements of Their Resistivity"

Moscow, Izv. AN SSSR: Ser. Fizicheskaya, Vol 36, No 3, Mar 72, pp 607-613

Abstract: Correction factors are calculated to account for the dimensions of the specimen and probe position in resistivity measurements by the four-probe method on rectangular and cylindrical single crystal semiconductors. The results of computer calculations are presented in tables and curves. It was found that reducing the thickness of a specimen past half the distance between probes does not affect the measurement results. It was also found that the specimen can be considered infinitely thick beyond a thickness of five times the distance between probes.

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1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--MATHEMATICAL MODEL OF THE CONTINUOUS STRIPPING OF SLAGS -U-

AUTHOR-(05)-LISOVSKIY, O.I., IVANOV, V.A., SHAPIROVSKIY, M.R., GOLUBEV, V.I., LYAPUNOV, I.D.

COUNTRY OF INFO--USSR

SOURCE--IZV.VYSSH. UCHEB. ZAVED., TSVET. MET. 1970, 13(1), 141-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MATHEMATIC MODEL, METALLURGIC SLAG, METALLURGIC PROCESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0841 STEP NO--UR/0149/70/013/001/0141/0147

CIRC ACCESSION NO--AT0132931

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132931

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESS OF STRIPPING THE SLAG IS DESCRIBED BY 11 MATH. EQUATIONS. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 669.14.018.45:620.193

GOLUBEV, V. I., BOGACHEV, I. N., and VEKSLER, Yu. G., Ural Polytechnic Institute

"Study of the Cavitation-Erosion Resistance of Stainless and Heat-Resisting Steels in Lead-Bismuth Melts"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 8, 70, pp 123-126

Abstract: The objective of this study was to assess the effect of Si and Mo on the cavitation and erosion resistance of austenitic stainless steels in Pb-Bi melts as compared to 1Kh18N10T and Kh18N14 steels without additional alloying, as well as the effect of heat treatment on the stability of heat-resisting steels. It was found that the cavitation and erosion resistance of steels and alloys in Pb-Bi melts is determined by their chemical composition and the method of heat treatment Cavitation and erosion failure of the metal's surface occurs following deformation and strengthening. The subsequent softening caused by internal ruptures in the grain, cracks, and separation of individual microvolumes sets in when the metal's ability to strengthen is exhausted. The addition of Si and Mo, alone with increasing the heat resistance, corrosion resistance, and plastic and strength limits, increases the resistance to plastic deformation of the surface layers on exposure to cavitation. The decrease in the resistance of steel in bismuth-rich melts is proportional to both the extent and depth of the strengthened zone.

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USSR UDC: 612.88

GOLUBEV, V. N., Department of Normal Physiology, "Order of Lenin" Red Banner Military Medical Academy imeni S. M. Kirov, Leningrad

"A Method for Quantitative Evaluation of the Functional State of the Motor Analysor"

Leningrad, Fiziologicheskiy Zhurnal SSSR, Vol 58, No 8, Aug 72, pp 1306-1309

Abstract: An experimental device is described for registration and quantitative evaluation of the transient process in the motor analysor system on the basis of automatic control theory. A KTE-1 silicon strain gauge resistor on a hand-held dynamometer connected in one of the arms of a bridge circuit is the pickup for the transient process. The signal from the unbalanced bridge is sent to a microammeter graduated in kilograms, amplified by a UBP1-02 low-frequency amplifier and sent to the recorder. The power supply for the amplifier also feeds the bridge. The electrodes and leads for biopotential pickup are described as well as a system for automatic analysis of the resultant electromyograms. The latter is basically a counter which receives the output pulses from

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USSR

GOLUBEV, V. N., Fiziologicheskiy Zhurnal, Vol 58, No 8, Aug 72, pp 1306-1309

the UBP1-02 amplifier after passage through a converter with standard square-wave output. The prf is then converted to a DC level whose amplitude is recorded on photosensitized chart paper. A resistance-capacitance (RC) filter is used to determine the integrated electrical activity of the electromyogram. A diode bridge is connected in the circuit for summation of the positive and negative components of the electromyogram. Analysis of experimental results shows that the motor analysor is regulated by a system which includes at least three control levels.

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1/3 025 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--INDIRECT EVALUATION OF THE POROSITY OF ELECTROLYTIC DEPOSITS -U-

AUTHOR-(02)-KOVARSKIY, N.YA., GOLUBEV, V.N.

6

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL KHIM. (LENINGRAD) 1970, 43(2) 348-54

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ELECTRODEPOSITION, METAL CRACKING, PITTING CORROSION, CRYSTAL GROWTH, COPPER ZINC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0771 STEP NO--UR/0080/70/043/002/0348/0354

CIRC ACCESSION NO--AP0111959

UNCLASSIFIED

2/3 025 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111959

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INFLUENCE OF THE MICRO THROWING POWER (MTP) OF PLATING ELECTROLYTES ON THE POROSITY OF DEPOSITS WAS STUDIED IN AN ATTEMPT TO ESTABLISH A CORRELATION BETWEEN BOTH VALUES. THE MTP WAS DETD. AS THE RATIO BETWEEN THE THICKNESS OF THE DEPOSITS AT THE PINNACLES AND VALLEYS OF A GROOVED SUBSTRATE, OR AS THE RATIO BETWEEN THE C.DS. OF A ROTATING DISK ELECTRODE AT 2 DIFFERENT SPEEDS UNDER POTENTIOSTATIC CONDITIONS. CU AND ZN WAS DEPOSITED ON STAINLESS STEEL SUBSTRATES, AND NI WAS DEPOSITED ON CU SUBSTRATES FROM CONVENTIONAL SIMPLE SULFATE BATHS. ALL SUBSTRATES WERE MECH. POLISHED UNTIL SURFACE ROUGHNESS WAS SMALLER THAN 0.01 MU, AS CHECKED WITH A PROFILOGRAPH. A SIMPLIFIED PORE FORMATION MECHANISM AND MODEL IS PROPOSED BASED ON THE INITIAL CRYSTAL NUCELATION PROCESSES AND THE SUBSEQUENT GROWTH OF THE CRYSTALLITES. IT IS ASSUMED THAT PITTING OR STRESS CRACKING POROSITY IS EXCLUDED AND SUBSTRATES ARE IDEAL. THE RATIO BETWEEN THE CRYSTAL GROWTH RATE IS VERTICAL, V SUBV, AND HORIZONTAL, V SUBH, DIRECTION, ASSUMING A RANDOM ORIENTATION OF THE CRYSTALS WITH RESPECT TO THE SUBSTRATE, CAN BE EXPRESSED BY THE EQUATION: V SUBV-V SUBH CONGRUENT TO CONST. (1-MTP), HENCE POROSITY (P) PER UNIT DEPOSIT THICKNESS IS INVERSELY PROPORTIONAL TO MTP. THE THEORETICALLY EVALUATED POROSITY MTP DATA WERE COMPARED WITH DIRECT MEASUREMENTS INVOLVING CONVENTIONAL MICROSCOPIC PORE DETN. TECHNIQUES. EXPTS. WERE PERFORMED AT DIFFERENT C.DS. AND BATH COMPNS. GOOD AGREEMENT EXISTS BETWEEN BOTH DATA, PROVING THE CORRECTNESS OF THE PROPOSED MODEL.

UNCLASSIFIED

3/3 025 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111959

ABSTRACT/EXTRACT--AN EXPRESSION IS PROPOSED FOR THE EVALUATION OF P DURING CU, ZN, OR NI PLATING BY INDIRECT MEASUREMENTS OF MTP: P EQUALS KR(1-MTP), WHERE K IS A COEFF. OF PROPORTIONALITY, DEPENDING ON THE NATURE OF THE METAL AND THE THICKNESS OF THE COATING, AND K EQUALS H-DELTAQ, WHERE H IS THE HEIGHT OF INITIAL ROUGHNESS AND DELTAQ THE QUANTITY OF ELECTRICITY. EXPTL. DATA OBTAINED BY USING MTP DATA BASED ON POLARIZATION MEASUREMENTS INVOLVING C.D. DATA OF A DISK ELECTRODE AT VARIOUS RPM ARE ALSO IN GOOD AGREEMENT WITH THE PROPOSED INDIRECT POROSITY CRITERION MTP.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--LONG ACTING STREPTOMYCIN -U-

AUTHOR-(04)-GOLUBEV, V.N., KOROLEVA, V.G., VASILYEV, V.K., LAZAREVA, YE.N.

COUNTRY OF INFO--USSR

SOURCE--ANTIBIOTIKI, 1970, VOL 15, NR 6, PP 491-494

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BENZENE DERIVATIVE, ETHYLENEDIAMINE, STREPTOMYCIN, SULFATE, BLOOD CHEMISTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1833 STEP NO--UR/0297/70/015/006/0491/0494

CIRC ACCESSION NO--AP0125444

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125444

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.

1,3,DIBENZYL,2,STREPTOMYCINIMIDAZOLIDIN SULFATE, A CONDENSATION PRODUCT OF STREPTOMYCIN WITH N, N PRIMEL,DIBENZYLETHYLENDIAMINE WAS STUDIED IN VITRO AND IN VIVO. ON INTRAMUSCULAR ADMINISTRATION OF A WATER SUSPENSION OF STREPTOIMIDOZOLIDIN (PARTICLES OF NOT MORE THAN 30 MICRONS) TO DOGS IN DOSES OF 20000 OR 40000 MU G-KG, THE DRUG WAS ABSORBED TO BLOOD AT A LOWER RATE AND PROVIDED LOWER LEVELS DURING THE FIRST HOURST OF OBSERVATION AS COMPARED TO STREPTOMYCIN, WHILE THE BLOOD LEVELS IN 3, 5, 8, 12 HOURS WERE MUCH HIGHER. MINOR CONCENTRATION OF STREPTOIMIDAZOLIDIN WERE DETECTED UP TO 72 HOURS AFTER THE ADMINISTRAITON. THE NEW DERIVATIVE DID NOT SIGNIFICANTLY DIFFER FROM STREPTOMYCIN BY THE GENERAL ANTIBACTERIAL SPECTRUM IN VITRO AND THE BASIC PHARACOLOGICAL CHARACTERISTICS. FACILITY: NATIONAL INSTITUTE FOR ANTIBIOTICS, MOSCOW.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--LIQUID VAPOR EQUILIBRIUM IN THE STYRENE ACRYLIC ACID SYSTEM -U-

AUTHOR--GOLUBEV, V.N.

6

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 706-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHASE EQUILIBRIUM, STYRENE, ACRYLIC ACID, REFRACTIVE INDEX, CHEMICAL LABORATORY APPARATUS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1252 STEP NO--UR/0080/70/043/003/0706/0708

CIRC ACCESSION NO--AP0126668

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133865

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN APP. IS DESCRIBED FOR STUDYING THE LIQ. VAPOR EQUIL. VAPOR COMPN. B.P. DATA ARE GIVEN FOR STYRENE ACRYLIC ACID MIXTS. THE RELATION BETWEEN THE REFRACTIVE INDEX (A) AND COMPN. IS GIVEN BY B EQUALS 2.4033 MINUS (13.4233 MINSU 25(A MINUS 0.8697) PRIME2) PRIME0.5, WHERE B IS THE MOLE FRACTION OF STYRENE IN THE LIQ. MIXT. FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EFFECT OF THE MICRORELIEF OF ELECTROLYTIC COPPER AND ZINC DEPOSITS ON THEIR CORROSION RESISTANCE -U-

AUTHOR-(02)-GOLUBEV, V.N., KOVARSKIY, N.YA.

COUNTRY OF INFO--USSR

SOURCE--ZASCH. METAL. 1970, 6(1), 59-60

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS

TOPIC TAGS--CORROSION RATE, ELECTROLYTIC COPPER, ZINC PLATING, ELECTRODEPOSITION, SURFACE ROUGHNESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1539 STEP NO--UR/0365/70/006/001/0059/0060

CIRC ACCESSION NO--AP0120320

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--23OCT7(

CIRC ACCESSION NO--AP0120320

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RATE OF CORROSION OF CU AND ZI DEPOSITS WAS INDEPENDENT OF THE CONDITIONS UNDER WHICH THEY WERE OBTAINED AND WAS DETD. PRIMARILY ON THE MICROGEOMETRY OF THE RESULTING SURFACE. THE RATE OF CORROSION IN BOTH KINDS OF DEPOSITS INCREASED WITH THE NUMERICAL VALUE OF R SUBA, DEFINED AS THE ARITHMETICAL MEAN OF THE DEVIATIONS FROM SMOOTHNESS IN THE PROFILE WHICH CHARACTERIZES THE SHAPE AND SIZE OF UNEVENNESS OF THE SURFACE. CORROSION RESISTANCE IS NOT DETD. BY THE SP. SURFACE OF THE SAMPLE BUT RATHER BY THE SHAPE, EXTENT, AND FREQUENCY OF MICROUNEVENNESS OF THE SURFACE.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--RADIATION GRAFTING OF ACRYLIC ACID AND STYRENE FROM THEIR VAPOR MIXTURES ON A POLYPROPYLENE FIBER -U-

AUTHOR-(03)-GOLUBEV, V.N., KORSHAK, V.V., TSETLIN, B.L.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(4), 846-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--ACRYLIC ACID, STYRENE, POLYPROPYLENE FIBER, PEROXIDE, COPOLYMERIZATION, RADIATION GRAFT POLYMERIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/2011 STEP NO--UR/0020/70/190/004/0846/0848

CIRC ACCESSION NO--AT0112966

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0112966

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADSORPTION OF STYRENE (I) AND ACRYLIC ACID (II) VAPORS ON POLYPROPYLENE FIBERS (III) PROCEEDS AT APPROX. THE SAME RATES. THE REACTIVITY RATIOS OF I-II COPOLYMN., INITIATED WITH PEROXIDES, ARE 0.25 FOR I AND 0.45 FOR II (G. ODIAN, ET AL., 1962). IN RADIATION GRAFTING OF I II VAPOR MIXTS. ON III, THE REACTIVITY RATIOS OF I AND II ARE 0.29 AND 0.43 RESP., INDICATING THAT III ACTS AS A SUPPORT FOR THE FREE RADICAL COPOLYMN. OF I WITH II. THE COPOLYMER IS SUBSEQUENTLY GRAFTED ONTO III (A. V. VLASOV, ET AL., 1966).

FACILITY: INST. ELEMENTOORG SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.396.62:621.391.84

GOLUBEV, V. N.

Chastotnaya izbiratelnost radiopriyemnikov AM-signalov (Frequency Selectivity of AM Radio Receivers), Moscow, Svyaz Press, 1970, 199 pp (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D1K)

Translation: This article contains an investigation of the theory and calculation of the characteristics of selectivity of AM receivers. A great deal of attention has been given to investigation of nonlinear effects on selectivity in the receiving channel. The characteristics of bandless reception are presented. The effect of the receiver heterodyne characteristics on selectivity is estimated. A procedure for measuring the selectivity characteristics is described. The concept of the selectivity coefficient is introduced. This helps to estimate the interrelation of individual parameters characterizing selectivity. There are 86 illustrations, nine tables and a 59-entry bibliography.

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GOLUBEV, V.S.

MHD

(3)

JPRS 61637

2 April 1974

Biblio

HIGHLY EFFICIENT SUPERSONIC NONEQUILIBRIUM MHD GENERATOR

[Article by A. D. Belykh, V. A. Gurashvili, V. S. Golubev; Moscow, Teplofizika Vysokikh Temperatur, Russian, Vol 11, No 6, 1973, signed to press 6 June 1973, pp 1289-1291]

The purpose of this article is to prove experimentally the feasibility of effective MHD-deceleration of plasma with nonequilibrium conductivity and high output power (~10^6 W).

Similar investigations are also being conducted in the U.S. [1, 2], where it has been shown that up to 10% of the enthalpy of plasma flow can be drawn off as electricity. The release of 20-30% enthalpy should trigger physical limitations (formation of shock waves, internal shorts in the MHD channel, boundary layer separation near the cathode wall, etc.).

In this connection an extensive arsenal of the tools of diagnosis (high-speed photography of the entire field of flow through completely transparent channel walls, measurement of the distribution pattern of potentials and currents in the channel, spectroscopic measurements of plasma parameters, measurement of static pressure distribution in the channel) was used in this work for complete explanation of the physical pattern of MHD-deceleration.

The studies were conducted in the "Udarnaya truba" [shock tube] installation using a medium (Ar + 0.1% Cs) with the following deceleration parameters: temperature from 5,000 to 7,500°K, pressure from 16 to 20 atm, mass flow rate from 1.5 to kg/s, and flow duration of 1.5-2 ms.

The MHD channel was attached to the end of a low-pressure chamber with a diameter of 15 cm and had a critical cross section of 4.6 × 4 cm^2, so that the gas flowed into the channel from the region behind the reflected shock wave. The channel expanded in one plane (the height along the magnetic field was 4 cm), entrance width was 10 cm, exit width was 17 cm and the length was 60 cm. The insulation walls were made of organic glass. The magnetic field for these channel dimensions was homogeneous in space with an accuracy of up to 5%; the time variation of the pulsed

(8)

JPRS 59459

9 July 1973

FEASIBILITY OF GENERATING MEGAGAUSS MAGNETIC FIELDS USING HIGH-PRESSURE COMPRESSED GAS LININGS

[Article by Ye. P. Velikhov, A. A. Vedenov, A. D. Bogdanets, V. S. Golubev, M. G. Kasharskiy, A. A. Kiselev, F. G. Rutberg, V. V. Chernukha; Leningrad, Zhurnal Tekhnicheskoy Fiziki, Russian, Vol 43, No 2, 1973, signed to press 8 June 1971, pp 429-438]

The results of calculation of a setup, designed for generating a megagauss pulse magnetic field in a large volume, are presented in this article. The magnetic field is amplified by compression in a cylindrical metal case, pushed by high-pressure gas (1,000-2,000 atm). The expected energy in the compressed magnetic field is several MJ and the lifetime of the field is of the order of 10 usec. In contrast to apparatus using explosives, the examined device is nondestructive; in contrast to devices used for compressing a shell with the energy of an electromagnetic field, the examined system does not experience the problems of super-power storage units and electromagnetic energy commutators.

Introduction

Pulsed megagauss fields, especially in a large volume and with high (~1 MJ and above) energies, are very important in modern industry. Thus, they may be used for solving the problem of controlled thermonuclear synthesis [1], investigating matter at superhigh pressures [2], generating a pulse of electromagnetic energy at high power and energies (10^{11}-10^{13} W, 10^{6}-10^{8} J). The literature contains the results of analysis of pulsed megagauss fields by collapsing a metal case using explosives [3] or the energy of a capacitor bank [4-6]. The use of explosives is technologically difficult and leads to total destruction of the system; the use of capacitor banks is limited for practical purposes to the energy level of 10^{5}-10^{7} J.

The use of the energy of compressed gas for collapsing a cylindrical metal shell (liner), amplifying a magnetic field by "adiabatic" compression

GOLUBEV, V.S.